

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON THE PATENTABILITY OF THE INVENTION (Chapter II of the Patent Cooperation Treaty)

Rec'd PCT/PTO 17 APR 2005

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference PCT 400 233 AMR	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/SE 2003/001590	International filing date (<i>day/month/year</i>) 14.10.2003	Priority date (<i>day/month/year</i>) 17.10.2002
International Patent Classification (IPC) or national classification and IPC B29C 39/36, B29C 41/40, B29C 45/40, B25J 5/06		
Applicant Cool Tool Holding AB et al		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 4 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
 - a. ☒ (*sent to the applicant and to the International Bureau*) a total of 3 sheets, as follows:
 - ☒ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
 - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
 - b. ☐ (*sent to the International Bureau only*) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

<input checked="" type="checkbox"/>	Box No. I	Basis of the report
<input type="checkbox"/>	Box No. II	Priority
<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
<input type="checkbox"/>	Box No. IV	Lack of unity of invention
<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
<input type="checkbox"/>	Box No. VI	Certain documents cited
<input checked="" type="checkbox"/>	Box No. VII	Certain defects in the international application
<input type="checkbox"/>	Box No. VIII	Certain observations on the international application

Date of submission of the demand 17.05.2004	Date of completion of this report 21.12.2004
Name and mailing address of the IPEA/SE Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. +46 8 667 72 88	Authorized officer Lars Hennix/ELY Telephone No. +46 8 782 25 00

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International Application No.

PCT/SE 2003/001590

Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This report is based on a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of:

- ☐ international search (under Rules 12.3 and 23.1(b))
☐ publication of the international application (under Rule 12.4)
☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

☐ the international application as originally filed/furnished

☒ the description:

pages 1 - 13 _____ as originally filed/furnished

pages* _____ received by this Authority on _____

pages* _____ received by this Authority on _____

☒ the claims:

pages _____ as originally filed/furnished

pages* _____ as amended (together with any statement) under Article 19

pages* 1 - 3 _____ received by this Authority on 2004-10-01

pages* _____ received by this Authority on _____

☒ the drawings:

pages 1 - 2 _____ as originally filed/furnished

pages* _____ received by this Authority on _____

pages* _____ received by this Authority on _____

☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
☐ the claims, Nos. _____
☐ the drawings, sheets/figs _____
☐ the sequence listing (*specify*): _____
☐ any table(s) related to the sequence listing (*specify*): _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages _____
☐ the claims, Nos. _____
☐ the drawings, sheets/figs _____
☐ the sequence listing (*specify*): _____
☐ any table(s) related to the sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International Application No.

PCT/SE 2003/001590

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	<u>1-11</u>	YES
	Claims		NO
Inventive step (IS)	Claims	<u>1-11</u>	YES
	Claims		NO
Industrial applicability (IA)	Claims	<u>1-11</u>	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

The following documents were cited in the International Search Report:

D1: WO0178970 A1
D2: US6341808 B1
D3: US5192070 A1
D4: EP1083032 A1
D5: US4389365 A1
D6: JP2002173250 A1

Amended claims 1-11 were filed on 2004-10-01 together with a statement.

The cited documents represent the general state of the art. The invention defined in claims 1-11 is not disclosed by any of these documents.

The cited prior art does not give any indication that would lead a person skilled in the art to the claimed device for removing an object from a moulding tool. Therefore, the claimed invention is not obvious to a person skilled in the art.

Accordingly, the invention defined in claims 1-11 is novel and is considered to involve an inventive step. The invention is industrially applicable.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

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Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

Claim 7 and the description page 8, line 20 refer to sealing means (18). However, in figure 1 the sealing means have the reference number (8).

CLAIMS

1. A device (1, 38, 42) for removing an object from a moulding tool (2, 30, 44) in connection with casting or moulding an object, wherein there is a retaining force between the moulding tool and the object, wherein the device comprises a body (5, 39, 43) designed with a contact surface (9) adapted for at least partly being in contact with the object and coupling means arranged for coupling the object to the body, characterized in that the body is provided with means (40, 46) for applying a traction force on the object, which traction force is substantially opposite to said retaining force, and the coupling means is arranged to couple the object to the contact surface such that said traction force becomes substantially uniformly distributed over the part of the surface of the object that is in contact with the contact surface.
2. A device according to claim 1, characterized in that said means (40, 46) for applying a traction force on the object is arranged for co-operation with the moulding tool (30, 44) for applying the traction force on the object.
3. A device according to claim 1 or 2, characterized in that the moulding tool (30) is provided with ejection means for ejecting the device 33 from the moulding tool, and that said means (40) for applying a traction force on the object is arranged for co-operation with the ejection means in such a way that the movement of the ejection means is transformed to a traction force on the device.
4. A device according to claim 1 or 2, characterized in that said means for applying a traction force on the object comprises push-away members (46) adapted to bear on the moulding tool and to apply a force between the moulding tool and the device, which force acts separating on them.

5. A device according to any of the previous claims, characterized in that the body comprises at least one section made of an substantially inelastic material and said section being arranged in connection to the contact surface (9).

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6. A device according to any of the previous claims, characterized in that said coupling means is arranged for coupling the object to the contact surface by means of under-pressure and that said coupling means is arranged so that it creates said under-pressure between the contact surface (9) and the object (3).

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7. A device according to claim 6, characterized in that the coupling means comprises sealing means (18) arranged for sealing between the contact surface (9) and the object (3), and at least one coupling channel (13) being arranged in connection to the contact surface (9), wherein the coupling channel is arranged for transporting air away from the contact surface.

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8. A device according to any of the claims 6 -7, characterized in that it comprises at least one air-permeable contact means (17) having a surface, which is at least a part of the contact surface and arranged to be in contact with the object (3) in such a way that deformation of the object is counteracted.

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9. A device according to claim 8, characterized in that the contact means (17) comprises a plurality of elements arranged such that cavities are formed between them, wherein transportation of air is admitted through the contact means.

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10. A device according to the claims 8 or 9, characterized in that the contact means (17) is substantially made of a sintered metal or a sintered metal alloy.

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11. A device according to any of the claims 7 - 10, characterized in that the contact means (17) is arranged such that transportation of air from the contact surface (9) to the coupling

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channel (13) occurs through the contact means, and that said sealing means (18) is arranged so that it surrounds the contact means.